Generations of Waste

CONTENT AREAS

- **Science**
  archaeology, classification, prediction, verification
- **Social Studies**
  American history, family structure, lifestyle

OBJECTIVES

Students will. . .

- identify, determine the amount, and classify the trash produced by a typical family from a historic time period
- understand how family lifestyles throughout American history have changed
- relate these changes to the amount and type of trash generation

MATERIALS

For groups of four to six students

- Artifact Code Sheet (one for each member)
- Site Sheets A, B, C, D, or E *Waste from Generation to Generation* (one for each student)
- Tally Sheet (for each group)
- Site Report Sheet and Presentation Organizer (for each group)
- Archaeological Convention (handout for each group)

TIME

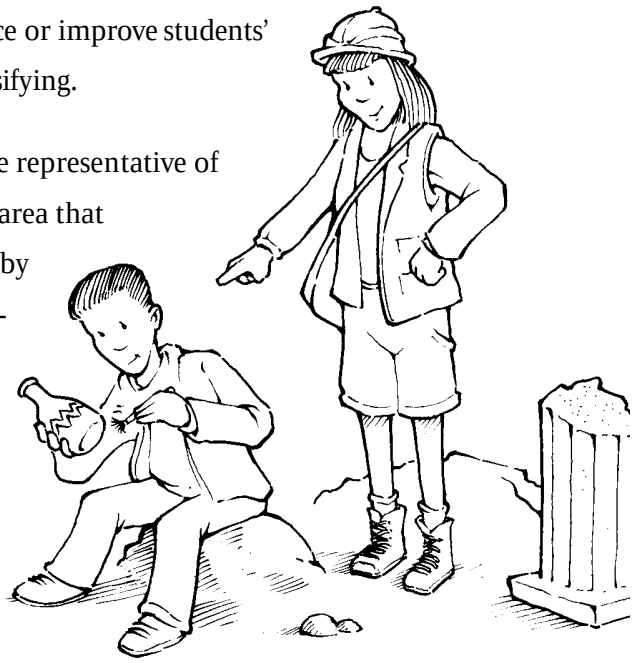
Three periods
45 minutes each

Trash is not a modern phenomenon. Since the dawn of civilization, humans have had to deal with their waste. What has changed over the course of history is the amount and kinds of trash we produce. This activity is a simulated archaeological dig that allows students to deduce a particular historical time period based on the trash that a "typical" family has discarded.

Students then analyze the trash and discuss their findings, forming a better picture of today's solid waste problems versus those in the past. For example, we no longer worry about what to do with horse manure. But we do have to deal with used batteries, an unknown issue 100 years ago.

This activity has a definite interdisciplinary flavor. It asks students to identify historical periods based on the trash that they find. The archaeologic aspect of the activity connects with both science and social studies. This activity is also appropriate to use in a science class to introduce or improve students' skills for identifying and classifying.

The grids for this activity are representative of a cross-sectional view of an area that might have been uncovered by an archaeological team excavating a dig site. There are five sites. The time periods are Native American, Colonial, the 1800s, 1940–1960s, and 1980–1990s.



PROCEDURE

1. To introduce the lesson, ask students to answer the following questions: What is archaeology? What do archaeologists do? How do they work? Are any of you interested in becoming an archaeologist?

2. Divide the class into five groups with four to six students in each group. Each group will identify the trash during one historical period: Site A, Native American; Site B, Colonial; Site C, the 1800s; Site D, 1940–1960s; and Site E, 1980–1990s. Do *not* reveal the time period.

Make sure that each group examines a different time period. Give every student in each group a copy of their assigned Site Sheet and an Artifact Code Sheet. Also give each group a Site Report Sheet and an Artifact Sheet.

3. You will act as a facilitator as each group "excavates" their site, identifies artifacts, and completes their Site Report Sheets. To do this, each group must:

a. Identify the items located on the site.

b. Make a list of the all materials located in the grid on the artifact sheet.

c. Count the number of each artifact found.

d. Identify the historical time period.

e. Classify the artifacts according to function:

- food
- shelter and "yard"
- food preservation/ packaging
- amusement
- cooking
- hygiene
- tools
- transportation
- hunting
- clothing

f. Determine the material(s) each artifact is made of (i.e., paper, plastic, glass, leather, food waste, metal, wood, textiles, rubber, yard waste).

g. Prepare a presentation that explains how the time period and lifestyle affected their family's trash.

4. When all groups have completed their Site Report Sheets, each group prepares and presents their information to the class.

5. When all information has been presented, lead the class in a discussion of how lifestyles have changed throughout history in the United States. Encourage discussion on how those changes have contributed to today's solid waste. The interesting discovery is that all time periods created trash: the difference is that the increase in our population's "throw away society" has led to our present solid waste situation.

QUESTIONS

a. Compare the Native American family with today's family. Identify the major differences in waste creation.

b. Did any group of people during any time period create less trash than we do today? Why or why not?

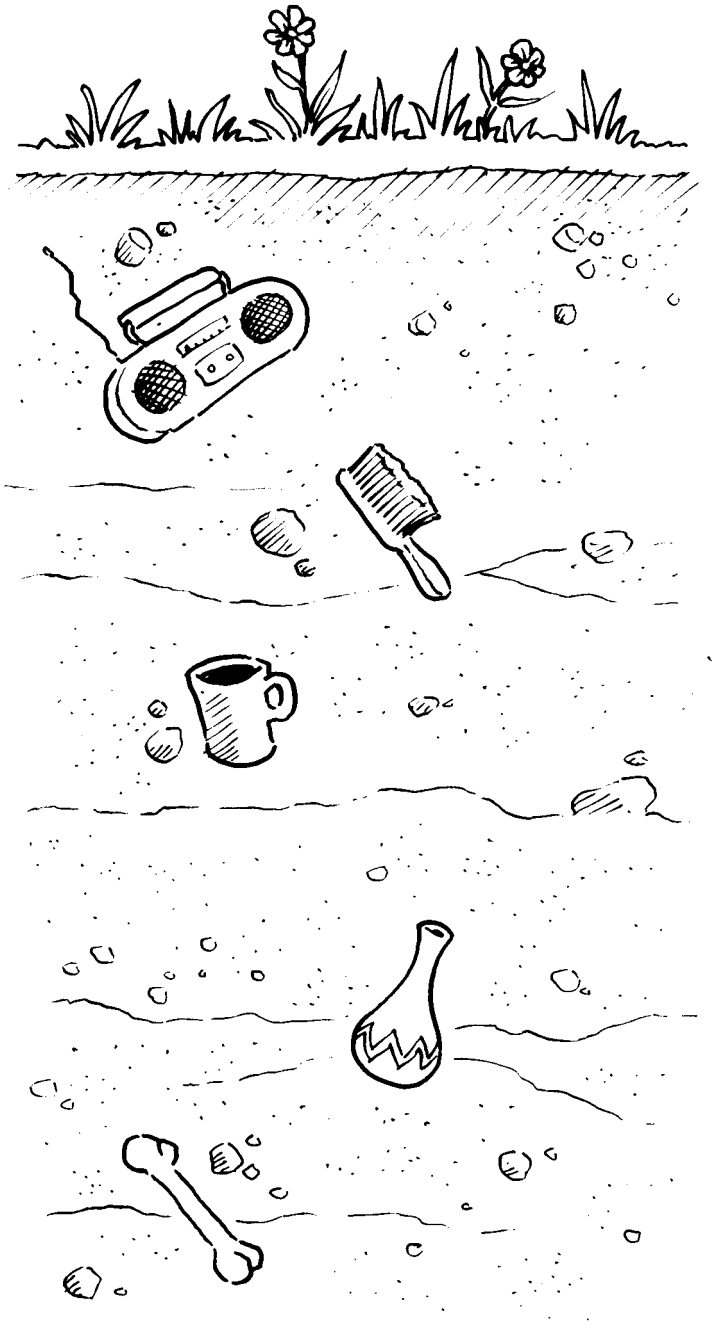
c. Is there a commonality between all the time periods? Is there any kind of trash or artifact that did not change?

d. How do you think the advances in materials science have affected lifestyles and subsequently, generating trash?

e. What kinds of problems did trash present during the various time periods? How have waste treatment methods changed?

EXTENSIONS

1. Have students research the dates when significant materials such as cloth, pottery, paper, glass, aluminum, steel, and various plastics were invented.
2. Research and develop a timeline or storyboard that illustrates the history of preservation and packaging.
3. Create a timeline of inventions that have had an affect on our lifestyles resulting in a change in what people throw away.



RESOURCES

1. Flexible Packaging Association
   John S. Henderson, Manager
   Educational Programs
   1090 Vermont Avenue, NW
   Suite 500
   Washington, DC 20005-4960
2. The Dow Chemical Company
   2040 Dow Center
   Midland, MI 48674
3. Partners For
   Environmental Progress
   P.O. Box 130116
   Ann Arbor, MI 48113
4. Dr. William Rathje, Director
   The Garbage Project
   University of Arizona

Answer Key to Artifacts List

SITE A

Native American

R7 redware pottery = 20
F2 fish bones = 18
S6 snail shells = 25
G6 gourds = 8
D4 dried berries = 26
B4 beads = 8
S11 stone tool shards = 30
B6 bird bones = 14
R3 raw hide = 2
T8 tobacco = 2
A10 ax = 1
C17 copper knife = 3
S8 spears = 4
A8 arrows = 9
F1 feathers = 8
R8 reed basket = 4
D5 dried pumpkin = 5
C19 corn or pea seeds = 26
S2 nut shells = 33
F5 fruit peels = 8
A6 antlers = 7
A5 animal fat = 4
S4 skins = 9

SITE B

Colonial

P12 potato = 13
C11 clay pipes = 26
S5 smoked fish = 18
G3 glazed pottery = 17
B8 brass pots = 7
T1 tankard (pewter) = 5
D1 deer bones = 13
C8 chicken bones = 25
L3 lead shot = 13
B9 brick = 16
B2 barrel staves = 4
C1 candles = 26
V1 vegetable leaves = 33
I4 iron nails = 8
M3 medicine bottles = 11
G4 gold beads = 3
A9 awl = 1
S9 spinning wheel = 1
A7 anvil = 2
F5 fruit peels = 2
C4 case bottles = 3
M5 metal buttons = 27
F3 fish hooks = 9
L4 leather bound book = 1
A10 ax =1
W3 wood ash = 20
F4 flint = 14
T8 tobacco = 8
L7 linen cloth = 8

SITE C

1800s

P12 potato = 13
W4 wooden pipes = 26
H1 handkerchiefs = 11
C9 china = 17
C18 copper pots = 7
G2 glasses (drinking) = 2
B5 beef bones = 13
S12 string = 9
C8 chicken bones = 25
L1 lamp chimney = 9
B9 brick = 17
B12 burlap bags = 4
F5 fruit peels = 26
V2 vegetable peels = 36
B11 butcher paper = 8
M1 mason jars = 11
W2 whale bone = 2
I1 ice pick = 1
H2 hammer = 1
I2 ice tongs = 1
J1 jar lids = 5
M2 meat grinder (hand) = 2
B7 bottles (glass) = 3
W6 woven baskets = 27
T8 tobacco = 5
T4 tin cans = 15
L4 leather bound books = 5
C20 cotton cloth = 5
W3 wood ash = 22
C6 chamber pot = 1
S3 silk cloth = 3
T6 train ticket = 2

SITE D

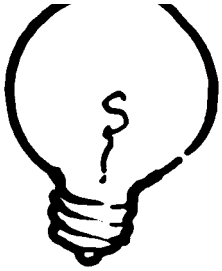
1940s–1960s

P1 paper bags = 13
A4 alum. t.v. dinner tray = 26
W1 wax paper wrapper = 18
M4 Melmac dishes = 17
C2 cardboard boxes = 7
S1 Sears catalog =1
R2 ration stamps = 13
B10 bus ticket = 9
C8 chicken bones = 25
C14 glass cola bottles = 13
N2 nylon stockings = 16
C3 cardboard record sleeve = 4
F5 fruit peels = 27
V2 vegetable peels = 33
B11 butcher paper = 8
S7 soap powder boxes = 11
N1 newspaper = 8
S10 steel lunch box/thermos = 1
L5 Life Magazine = 2
M8 motor oil can = 4
P14 poodle skirt = 1
W5 wooden crate = 3
C12 cloth diaper = 5
K1 Kleenex = 6
G1 glass milk bottles = 3
L6 light bulbs = 27
C10 cigarettes = 5
A3 alum. toothpaste tube = 9
P2 paper back books = 4
R4 rayon blouse = 2
R5 45 record = 2
T3 telephone bill = 3
D3 dish towels = 6
R1 radio tube = 20
T5 toilet paper roll = 3
L2 lawn clippings = 6
H1 handkerchief = 2

SITE E

1980s–1990s

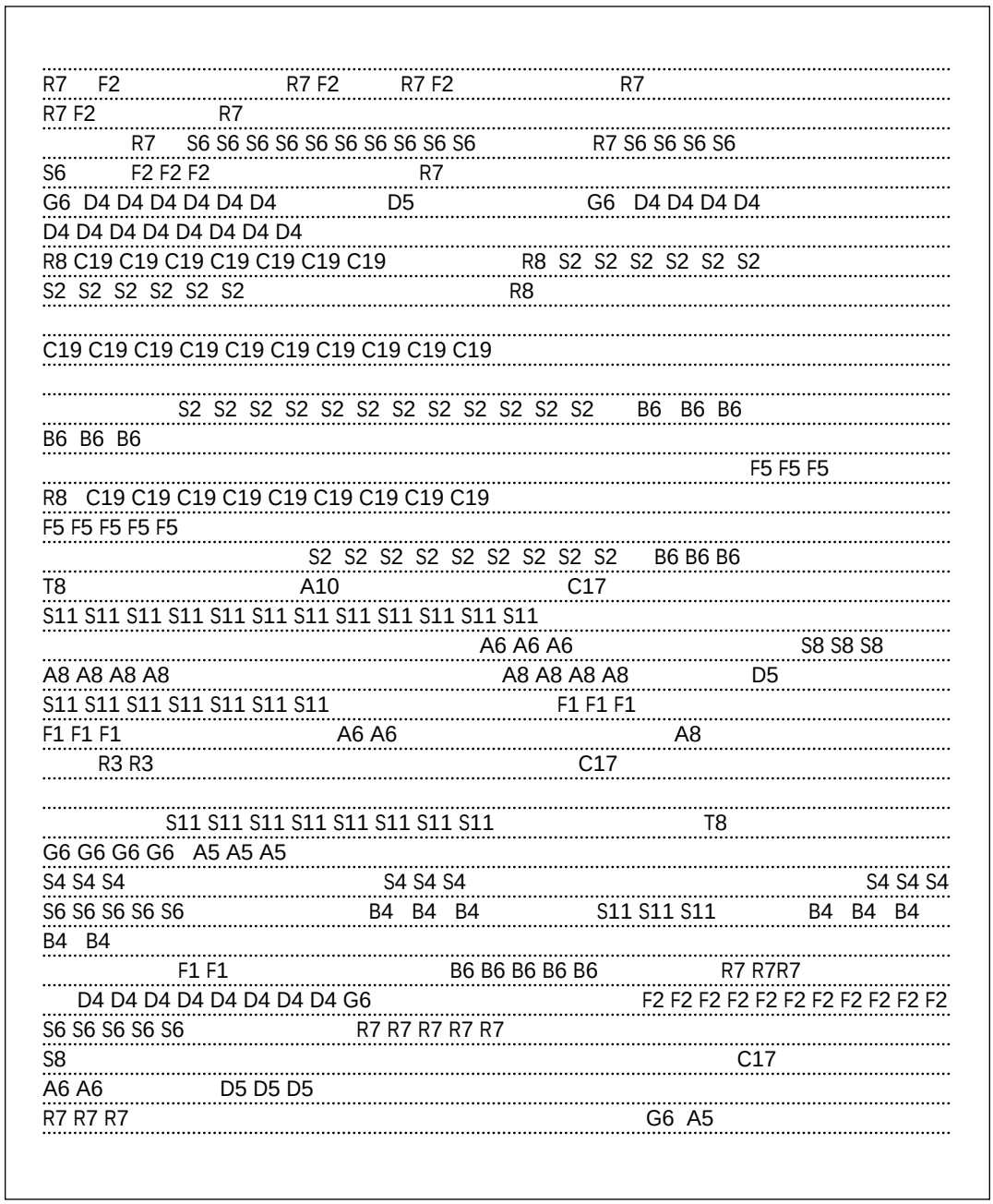
P1 paper bag = 13
M6 microwave container = 26
P13 clear plastic wrap = 18
A2 aluminum can = 4
M7 milk/juice box = 7
R9 refillable detergent bottle = 2
G5 Gore-Tex jacket = 1
B3 battery (c-size) = 13
A1 airplane ticket = 3
C8 chicken bone = 10
P9 plastic CD case = 4
P6 pantyhose = 4
P10 plastic grocery bag = 4
F5 fruit peel = 8
P7 photocopy = 33
F6 foam plastic tray/cup = 5
P8 plastic bottle/jug = 11
N1 newspaper = 8
C13 cloth lunch bag = 1
L8 LL Bean Catalogue = 1
D2 disposable diaper = 5
P11 plastic pickle pouch = 1
C15 computer printer paper feed = 11
C16 computer disk = 3
P5 milk carton = 7
K1 Kleenex = 8
J2 junk mail = 13
C5 cassette tape/VCR tape = 4
T2 Teflon-coated pan = 2
T7 T-shirt = 6
x vegetable peel = 8
T3 telephone bill = 4
P4 paper towel = 15
B1 Barbara Streisand ticket = 2
T5 toilet paper roll = 3
C7 chemical fertilizer bag = 1



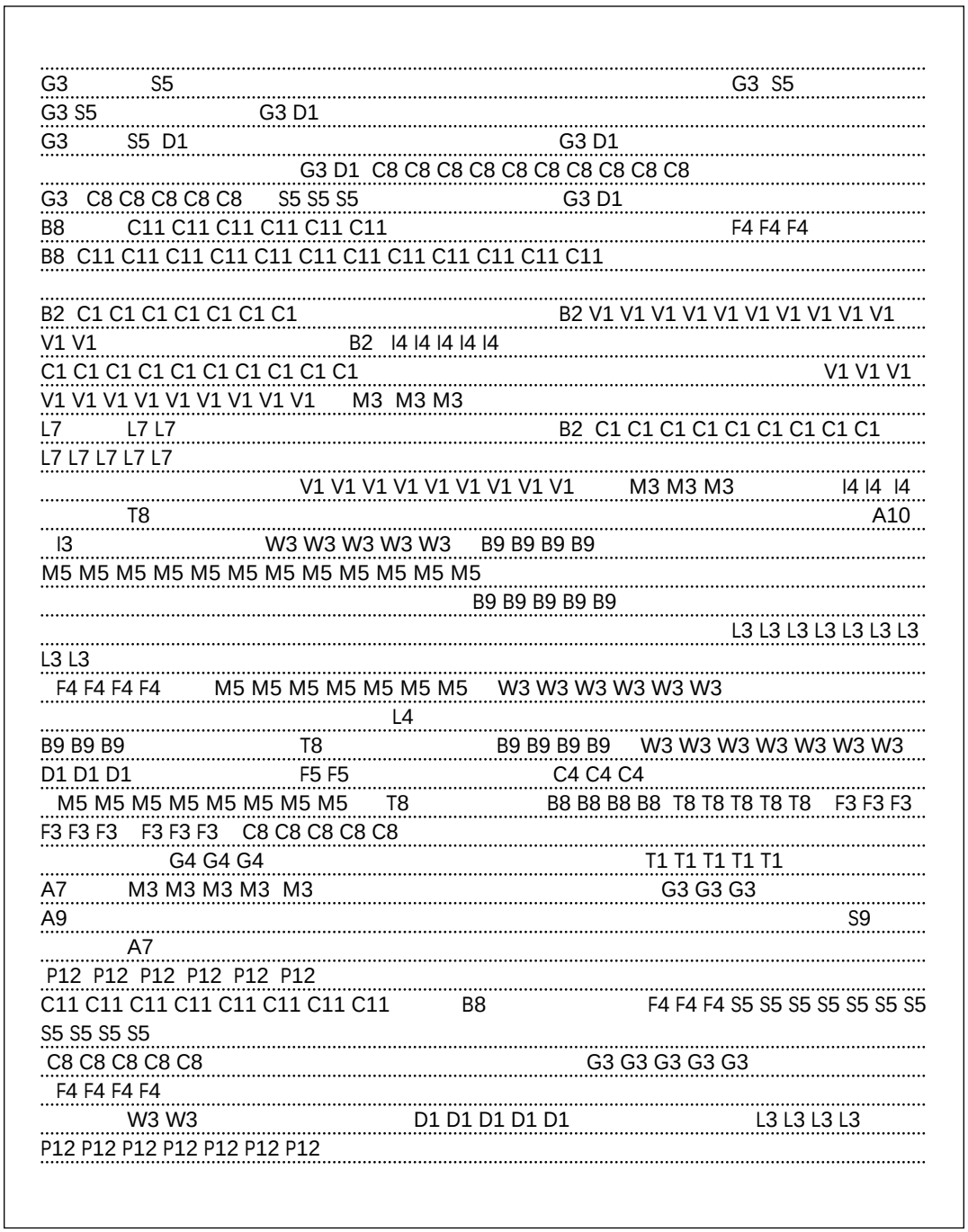
Artifact Code Sheet

A1 airplane ticket
A2 aluminum can
A3 aluminum toothpaste tube
A4 aluminum TV dinner tray
A5 animal fat
A6 antler
A7 anvil
A8 arrow
A9 awl
A10 ax
B1 Barbara Streisand Ticket
B2 barrel stave
B3 battery (c-size)
B4 beads
B5 beef bone
B6 bird bone
B7 bottles (glass)
B8 brass pot
B9 brick
B10 bus ticket
B11 butcher paper
B12 burlap bag
C1 candle
C2 cardboard box
C3 cardboard record sleeve
C4 case bottle
C5 cassette tapes/VCR tape
C6 chamber pot
C7 chemical fertilizer bag
C8 chicken bone
C9 china
C10 cigarette
C11 clay pipe
C12 cloth diaper
C13 cloth lunch bag
C14 glass cola bottle
C15 computer printer paper feed
C16 computer disk
C17 copper knife
C18 copper pot
C19 corn/pea seed
C20 cotton cloth
C21 cotton stocking
D1 deer bone
D2 disposable diaper
D3 dish towel
D4 dried berries/fruit
D5 dried pumpkin
F1 feathers
F2 fish bones
F3 fishhook
F4 flint
F5 fruit peel
F6 foam plastic cup
G1 glass milk bottle
G2 glasses (drinking)
G3 glazed pottery
G4 gold beads
G5 Gore-Tex jacket
G6 gourd
H1 handkerchief
H2 hammer
I1 ice pick
I2 ice tongs
I3 iron horse shoe
I4 iron nail
J1 jar lid
J2 junk mail
K1 Kleenex
L1 lamp chimney
L2 lawn clippings
L3 lead shot
L4 leather-bound book
L5 Life Magazine/black and white
L6 light bulb
L7 linen cloth
L8 LL Bean catalogue
M1 mason jar
M2 meat grinder (hand)
M3 medicine bottle
M4 Melmac dish
M5 metal button
M6 microwave entree container
M7 milk/juice box
M8 motor oil can
N1 newspaper
N2 nylon stocking with seams
P1 paper bag
P2 paperback book
P3 paper plate
P4 paper towel
P5 milk carton
P6 pantyhose
P7 photocopy
P8 plastic bottle/jug
P9 plastic CD case
P10 plastic grocery bag
P11 plastic pickle pouch
P12 potato
P13 clear plastic wrap
P14 poodle skirt
R1 radio tube
R2 ration stamps
R3 raw hide
R4 rayon blouse
R5 45 record
R6 recycled paper
R7 redware pottery
R8 reed basket
R9 refillable detergent bottle
S1 Sears catalog
S2 shells of nuts
S3 silk cloth
S4 skins
S5 smoked fish
S6 snail shell
S7 soap powder box
S8 spears
S9 spinning wheel
S10 steel lunch box/thermos
S11 stone tool shard
S12 string
T1 tankard (pewter)
T2 Teflon-coated pan
T3 telephone bill
T4 tin can
T5 toilet paper roll
T6 train ticket
T7 T-shirt
T8 tobacco
V1 vegetable leaves
V2 vegetable peels
W1 wax paper wrapper
W2 whale bone
W3 wood ash
W4 wooden pipes
W5 wooden crate
W6 woven basket

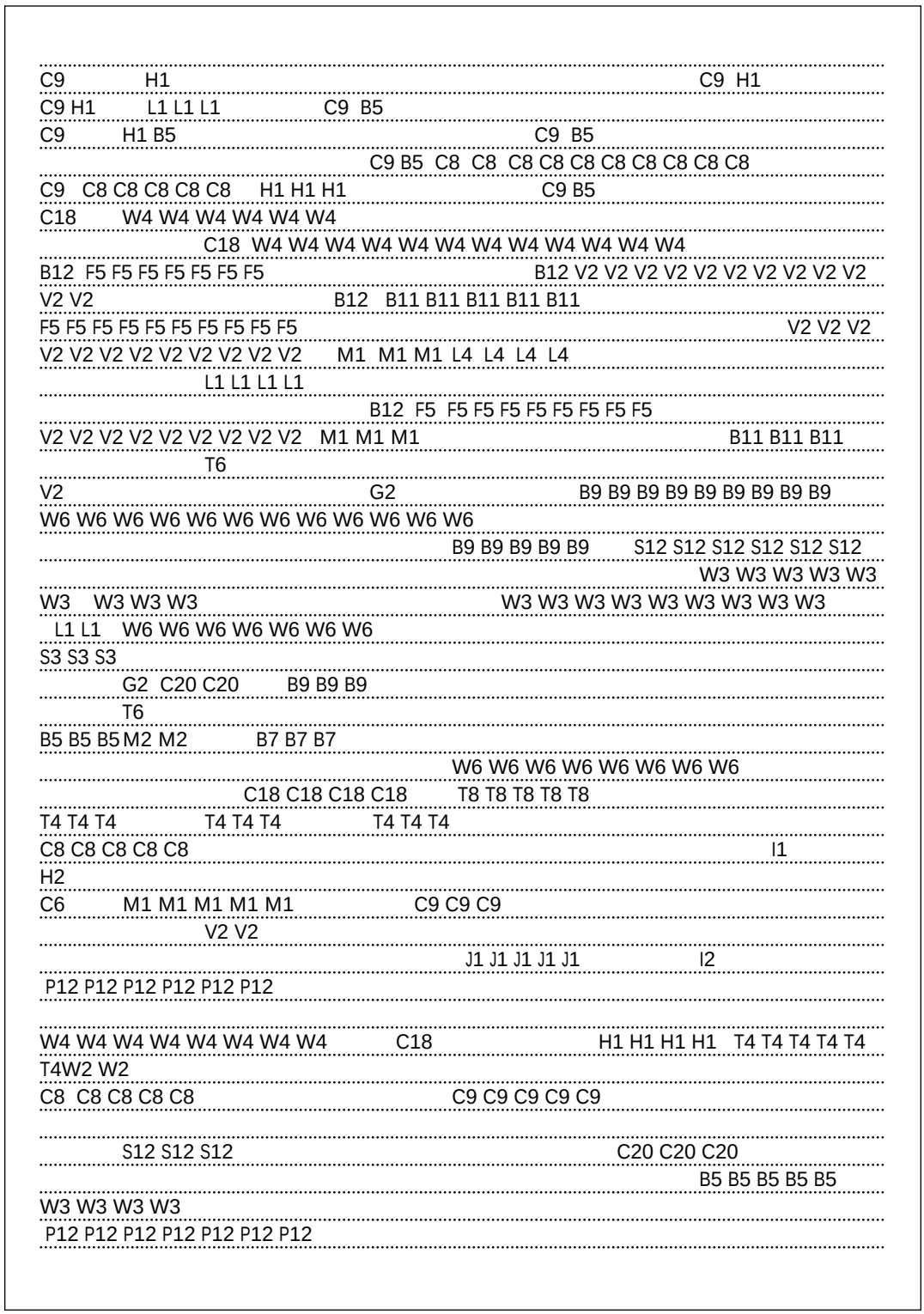
Site A: Waste from Generation to Generation



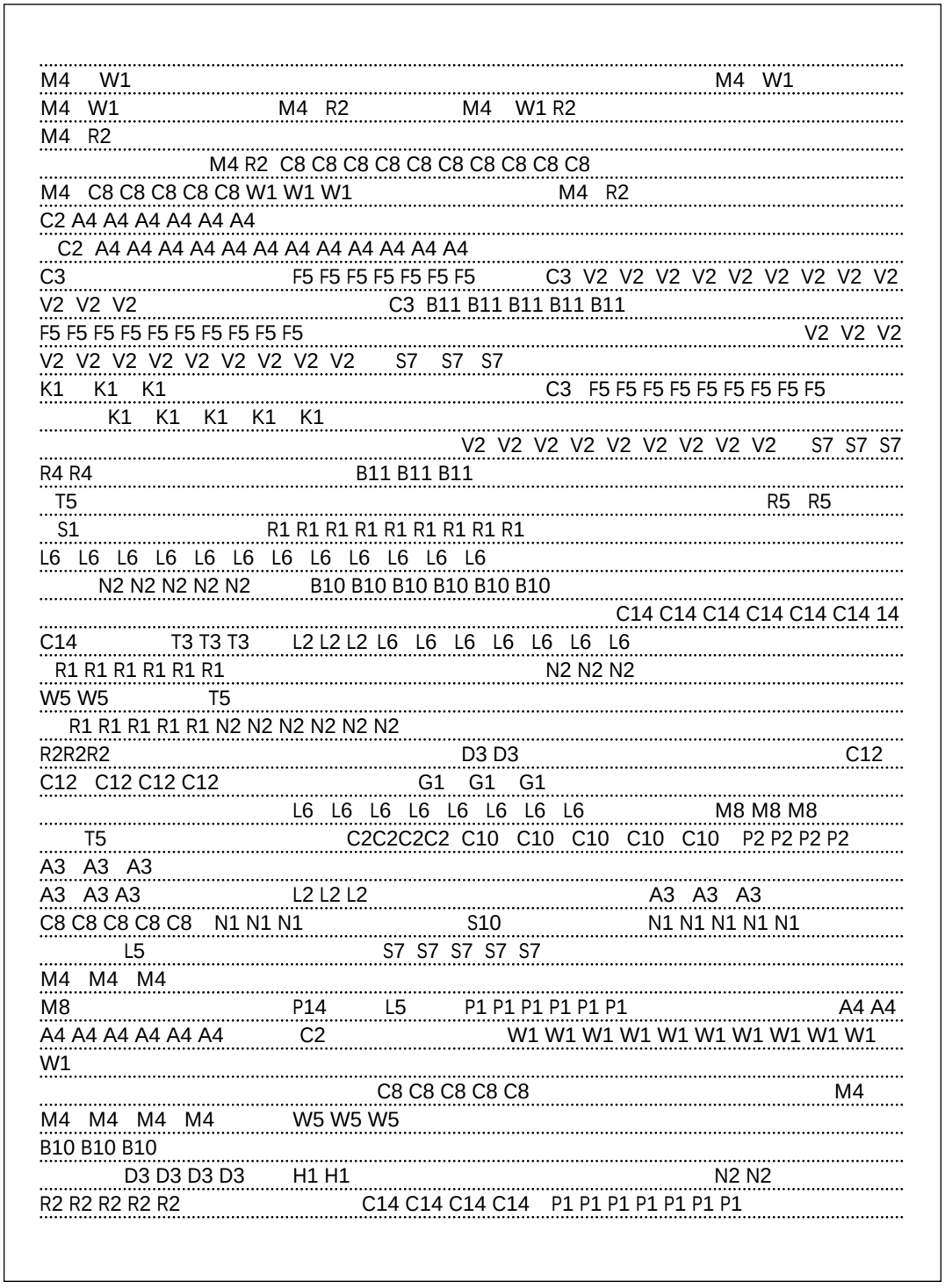
Site B: Waste from Generation to Generation



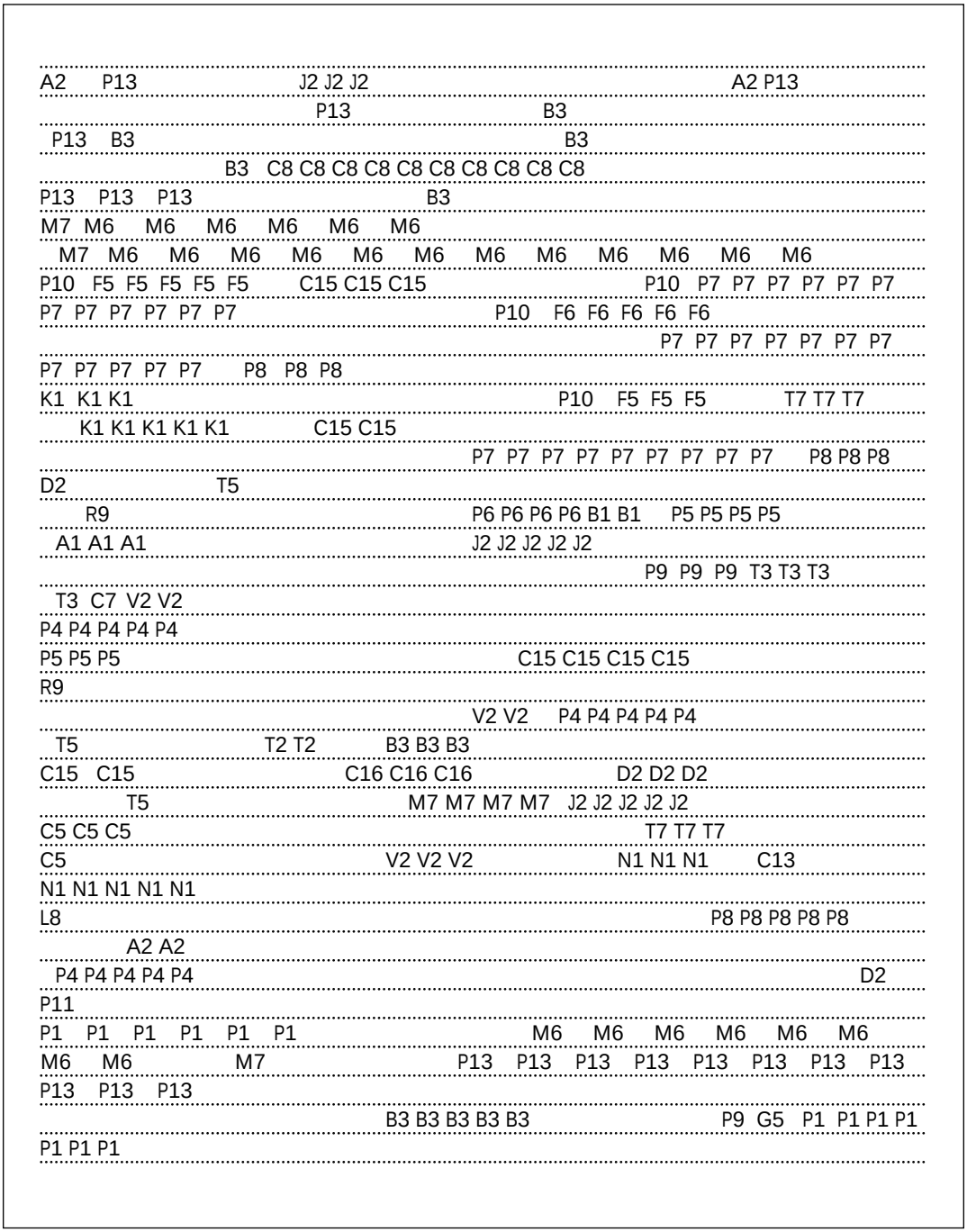
Site C: Waste from Generation to Generation



Site D: Waste from Generation to Generation



Site E: Waste from Generation to Generation



DISCUSSION QUESTIONS

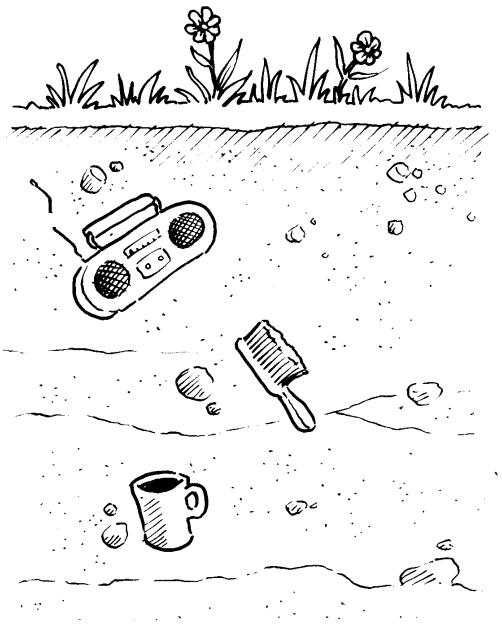
a. Compare the Native American family with today's family. Identify the major differences in waste creation.

b. Did any group of people create less trash than we do today? Why or why not?

c. Is there a commonality between all of the periods? Is there any kind of trash or artifact that did not change?

d. How do you think the advances in materials science have affected lifestyles and subsequently generating trash?

e. What kinds of problems did trash present during the various time periods? How have waste treatment methods changed?



The Archeology of Garbage

One of the best ways to learn about a society is to study its garbage. No one knows more about garbage, both past and present, than Dr. William L. Rathje, Professor of Archaeology at the University of Arizona, and Director of The Garbage Project. Here are a few of the facts that he has gleaned from sorting through landfills.

- Past civilizations and cultures have been just as wasteful as our society. For example, certain Native American tribes routinely killed more bison than they needed to survive. One Plains tribe went so far as to eat only the nose, which they considered a great delicacy. The rest of the carcass was discarded.
- While your parents may be telling you to eat your vegetables, they probably don't take their own advice. Fresh produce is probably the biggest contributor to food waste in garbage.
- People over-report the amount of healthy food they eat, and under-report the amount of not-so-healthy food. The Garbage Project has shown that study respondents say that they eat far more tuna, cottage cheese and lettuce than they actually consume. On the other hand, they drink far more regular soda and beer than they admit.

These actual findings run contrary to what we would like to believe about ourselves and other people. Can you explain why these differences might exist?

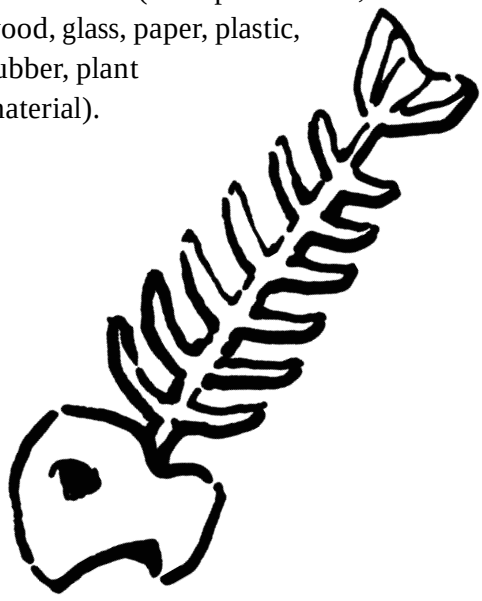
Site Report Sheet and Presentation Organizer

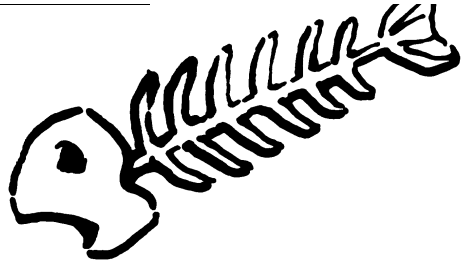
INSTRUCTIONS FOR TALLY SHEET
Excavating your site

You are a member of an archaeological team carrying out an excavation. Your team has been assigned a site filled with discards from an unknown time period in American history. Your group should work to identify all the artifacts found on the site. Based upon your findings, try to identify the time period from which they came.

1. Using your site grid sheet which is labeled Waste from Generation to Generation, find an artifact that is represented by a letter and number. Look up the artifact on the Artifact Code Sheet. Write the name of the item on the Tally Sheet.
2. Count how many of each artifact you find and add that to your Tally Sheet.
3. Classify each artifact according to its function. For example,
   - food
   - food preservation/ packaging
   - cooking
   - tools
   - hunting
   - clothing
   - shelter and "yard"
   - amusement
   - hygiene and medicine
   - transportation

   (Not all artifacts will fit within these categories. You may need to assign specific functions to some items.)
4. Identify the materials used to make each artifact (examples: leather, wood, glass, paper, plastic, rubber, plant material).





Tally Sheet

Site Identification

Item Name	Number found	Function	Material
1.			
2.			
4.			
5.			
6.			
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33.

34.

35.

36.

Archaeological Convention

Name _____

CLASS PRESENTATION

As part of an archaeological convention, your group will be presenting the findings from your site to the class. In order to have a complete report, answer these questions, using the data table below to organize your notes.

1. In what period did the family live? What were some of the artifacts that helped you to determine the timeframe? What resources would you use to be sure that the time period is correct?
2. Look at the functions of the items on your list. Did this family lead a simple lifestyle or a lifestyle characterized by many conveniences? Why would you say that?
3. How did their lifestyle affect their family's trash?
4. How much and what types of technology did this family enjoy? How did technology affect their trash?

SITE A

1. Time period _____

2. Lifestyle _____

3. Technology _____

4. Effects on trash _____

SITE B

1. Time period _____

2. Lifestyle _____

3. Technology _____

4. Effects on trash _____

SITE C

1. Time period

2. Lifestyle

3. Technology

4. Effects on trash

SITE D

1. Time period

2. Lifestyle

3. Technology

4. Effects on trash

SITE E

1. Time period

2. Lifestyle

3. Technology

4. Effects on trash